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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,315	12/02/2005	Hiroyuki Kawai	267381US0XPCT	9593
22850	7590	09/19/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
ENIN-OKUT, EDUE				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
09/19/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/527,315

Applicant(s)

KAWAI ET AL.

Examiner

Edu E. Enin-Okut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 3/10/06, 10/19/07
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of Applicant's claim for foreign priority to Japanese Patent Application No. JP 2002-265324, filed on September 11, 2002, under 35 U.S.C. 119(a)-(d). A certified copy of that application has been received.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al., U.S. Patent No. 5,366,832, in view of Tamura et al., U.S. Patent No. 6,156,869. Additional supporting evidence provided by *Physical Testing of Textiles*.

Regarding claim 1, Hayashi teaches a separator for alkaline batteries (i) which comprises a non-woven fiber structural material comprising a polyamide fiber and a cellulose fiber as main component fibers (Abstract; 8:4-8), wherein (iii) the cellulose fiber is a solvent-spun cellulose fiber produced by

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using a spinning solution prepared by dissolving cellulose into a non-reactive solvent (5:55-58); and (iv) a ratio of an amount by mass of the polyamide fiber to an amount by mass of the cellulose fiber in the non-woven fiber structural material is in a range of 20:80 to 80:20 [75 to 40 wt. %] (9:11-18).

Hayashi does not expressly teach that (ii) the polyamide fiber is a fiber formed with a polyamide constituted with a dicarboxylic acid unit and a diamine unit, the dicarboxylic acid unit comprising 60% by mole or more and 100% by mole or less of a terephthalic acid unit and the diamine unit comprising 40% by mole or more and 99% by mole or less of a 1,9-nonanediamine unit.

Tamura teaches the production of polyamides including a step of polycondensing a dicarboxylic acid component having a terephthalic acid content of from 60 to 100 mol % and a diamine component in which the amount of 1,9 -nonanediamine and/or 2-methyl-1,8-octanediamine falls between 60 and 100 mol % (Abstract). The amount of at least one of 1,9 -nonanediamine and 2-methyl-1,8-octanediamine of the diamine component to be used falls between 75 and 100 mol %, more preferably between 90 and 100 mol % (6:14-20). These ranges include all specific values and subranges therebetween, such as 80, 85, 95, 98 and 99 mol % (6:20-21). The reference also states that the polyamides produced have good properties of heat resistance, mechanical capabilities, water absorption resistance and chemical resistance and are used widely for clothing, fibers for industrial materials and manufacturing materials for electrical and electronic appliances (1:24-27, 3:39-43; 12:54-13:4).

Hayashi and Tamura are related art because they both are concerned with synthetic fibers for use as manufacturing material for electrical devices.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the polyamide as taught by Tamura to form the polyamide fiber used in the separator of Hayashi to improve the separator's mechanical and chemical properties (i.e., heat resistance, mechanical capabilities, water absorption resistance and chemical resistance).

Regarding claim 2, Hayashi, as modified by Tamura, teaches that the polyamide forming the polyamide fiber comprises a mixture of a 2-methyl-1,8-octanediamine unit in combination with the 1,9-nonanediamine unit (6:23-28).

As to the ratio of an amount by mole of the 1,9-nonanediamine unit to an amount by mole of the 2-methyl-1,8-octanediamine unit in the polyamide being in a range of 99:1 to 40:60, Tamura teaches examples of 1,9-nonanediamine and 2-methyl-1,8-octanediamine mixtures with molar ratios of 85:15 (Examples 1, 4), 100:0 (Example 2) and 1:1 (Example 3).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Regarding claim 3, Tamura teaches the polycondensation (which forms the polyamide) is effected in the presence of a terminal-blocking agent that, if added, facilitates the molecular weight control of the polyamide formed, and improves the melt stability thereof (9:40-44). The terminal-blocking agent may be any and every monofunctional compound having reactivity with the terminal amino group or the terminal carboxyl group of the primary polycondensate being formed, such as monocarboxylic acids (9:44-49, 9:58-10:2). The amount of the terminal-blocking agent to be used falls between 0.1 and 15 mol % relative to the number of mols of all dicarboxylic acids and diamines used for the polycondensation (10:21-29).

It should be noted that the Applicant states in paragraphs 47 and 48 of its application that the amount of the chain end sealing agent, preferably a monocarboxylic acid, used in preparation of the polyamide is about 0.5 to 10% by mole based on the total of the amount by mole of the dicarboxylic acid and the amount by mole of the diamine.

Since it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art, one of ordinary skill in the art at the time of the invention would have

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found it obvious to use a chain sealing agent, as taught by Tamura, in the preparation of the polyamide fiber used in the separator of Hayashi, as modified by Tamura, in order to obtain a fiber with a fraction of scaled chain ends of 10% or greater.

Regarding claim 4, Hayashi teaches that the synthetic fibers used in the separators are 1 denier (~3.5 μm) or less, preferably 0.5 denier (~2.5 μm) or less, more preferably 0.3 denier (~1.9 μm) or less (8:45-47; see *Physical Testing of Textiles*, p. 47).

One of ordinary skill in the art would readily appreciate that a polyamide fiber (i.e., a nylon fiber) with a size in the range of 0.01 to 1.0 dtex is equivalent to approximately 0.33 to 3.4 μm in diameter (see *Physical Testing of Textiles*, p. 47).

As discussed above, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claim 5, Hayashi teaches the cellulose fiber is a solvent-spun cellulose fiber obtained by dry-wet spinning in water of a spinning solution prepared by dissolving cellulose into an amine oxide (2:55-58; claim 3).

Regarding claim 6, Hayashi teaches that the main component fibers are adhered together with a fiber-shaped binder (7:9-14).

Regarding claim 7, Hayashi teaches that the amount of binder used in the separator is in a range of 3.1 to 42.9 wt. % (7:44-51).

As discussed above, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I).

Regarding claim 8, Hayashi, as modified by Tamura, teaches an alkaline battery which is equipped with a separator for alkaline batteries described in claim 1 (Abstract; Fig. 1).

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-6 and 8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 7-10 of U.S. Patent No. 5,366,832 in view of and Tamura et al. US 6,156,869.

Regarding claims 1-6 and 8, U.S. Patent No. 5,366,832 (Patent ‘832) teaches the limitations recited in these claims except for the use of a polyamide fiber and its formation as recited in claim 1, sections (i) and (ii).

However, Patent ‘832 does teach that the separator further contains a synthetic fiber, as recited in claim 2.

Tamura, discussed above, teaches the production of polyamides including a step of polycondensing a dicarboxylic acid component having a terephthalic acid content of from 60 to 100 mol % and a diamine component in which the amount of 1,9 -nonanediamine and/or 2-methyl-1,8-octanediamine falls between 60 and 100 mol % (Abstract). The amount of at least one of 1,9 -nonanediamine and 2-methyl-1,8-octanediamine of the diamine component to be used falls between 75

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and 100 mol %, more preferably between 90 and 100 mol % (6:14-20). These ranges include all specific values and subranges therebetween, such as 80, 85, 95, 98 and 99 mol % (6:20-21). The reference also states that the polyamides produced have good properties of heat resistance, mechanical capabilities, water absorption resistance and chemical resistance and are used widely for clothing, fibers for industrial materials and manufacturing materials for electrical and electronic appliances (1:24-27, 3:39-43; 12:54-13:4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the polyamide as taught by Tamura to form the synthetic fiber used in the separator of Patent '832 to improve the separator's mechanical and chemical properties (i.e., heat resistance, mechanical capabilities, water absorption resistance and chemical resistance).

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edu E. Enin-Okut whose telephone number is 571-270-3075. The examiner can normally be reached on Monday-Thursday, 8 a.m. - 4 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/
Examiner, Art Unit 1795

/SUSY N TSANG-FOSTER/
Supervisory Patent Examiner, Art Unit 1795